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THE OCCURRENCE OF A SAUROPOD DINOSAUR IN THE TRINITY CRETACEOUS OF OKLAHOMA

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WITH AN INTRODUCTORY NOTE BY S. W. WILLISTON

Recently, during a visit to Norman, Oklahoma, Professor Gould, director of the State Geological Survey, called my attention to a large fossil bone which had lately been discovered in the Trinity Cretaceous of that state by Mr. Pierce Larkin of the survey. This specimen, clearly a morosaurian coracoid, furnishes the first indisputable evidence of the occurrence of the sauropod dinosaurs in the Cretaceous of western America. At my suggestion Mr. Larkin has prepared the following brief description of the Trinity deposits of Oklahoma, giving the precise horizon of the fossil. The precise taxonomic location of the specimen is not possible, since generic characters are not well displayed in the coracoids of the dinosaurs, and because of the partial mutilation of the specimen as it occurred in its matrix. Excellent figures of the specimen, furnished by Professor Gould, will render unnecessary a detailed description of the bone. The occurrence of the Sauropoda in the Lower Cretaceous is of course to be expected, since the recent discovery of similar remains in the Upper Cretaceous of Africa. I have long believed that the Morrison beds of the west are, in part at least, equivalent in age to the Comanche Cretaceous of the interior.—S. W. WILLISTON.

The Trinity division of the Cretaceous of Texas contains three distinct formations, the Travis Peak, the Glen Rose, and the Paluxy. The Travis Peak and Paluxy are sand members, while the Glen Rose is calcareous. Toward the north this formation loses its distinctive characteristics and merges gradually into the sandy members above and below until one part of the Trinity cannot be distinguished from another. Throughout northern Texas and Oklahoma there is practically no change which could be made use of in separating

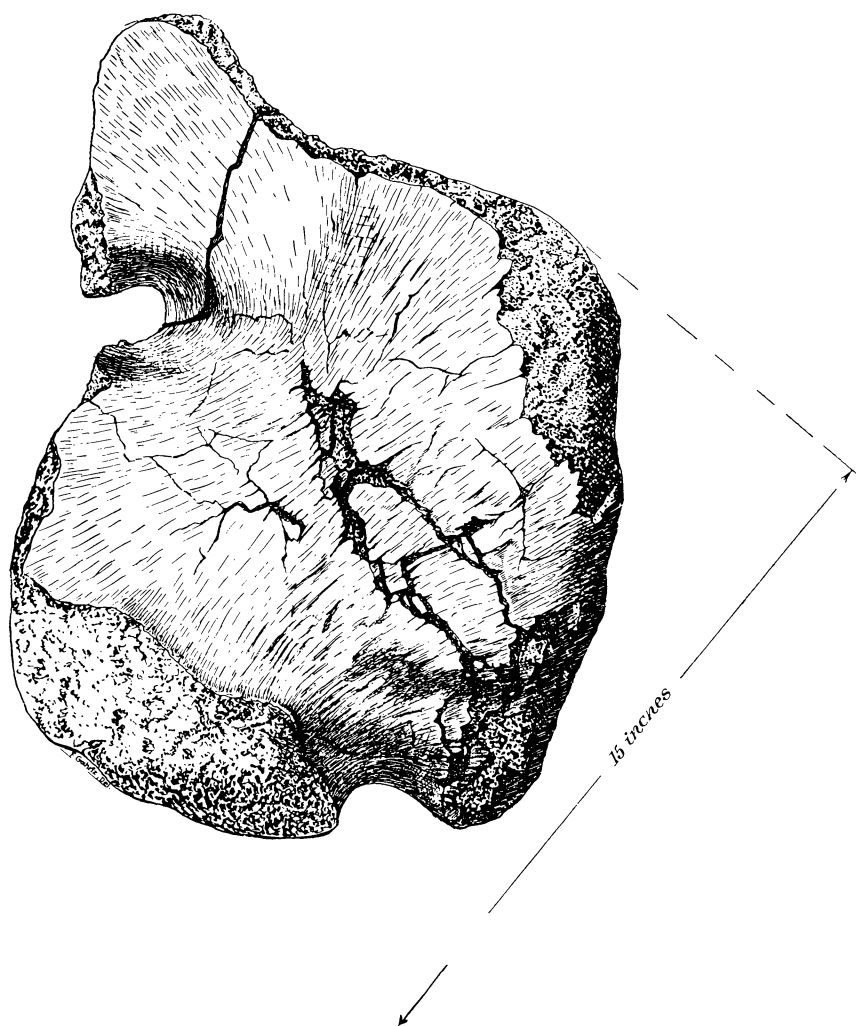


FIG. 1.—Right coracoid of sauropod, external side; one-fourth natural size.

the division into formations. There are no features which are continuous over large areas.

The Trinity enters Oklahoma from Texas near the western

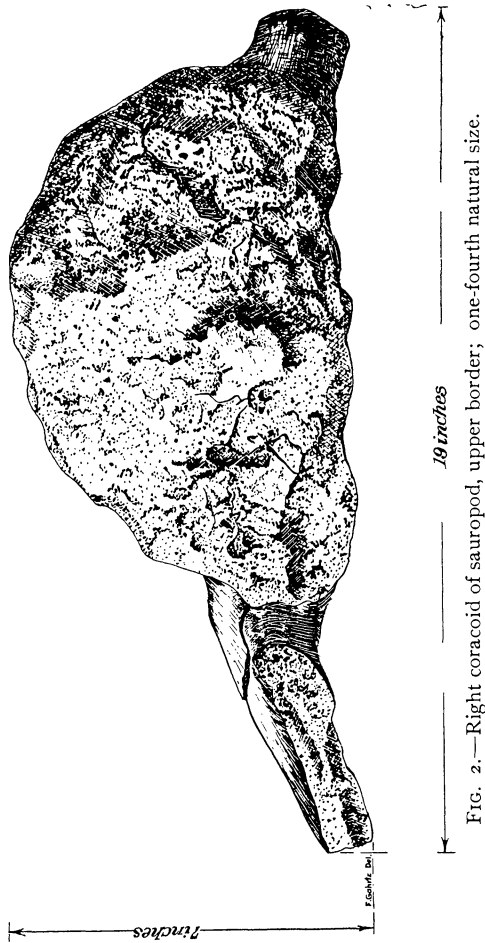


FIG. 2.—Right coracoid of sauropod, upper border; one-fourth natural size.

line of Love County and leaves the state near the center of the McCurtain County line; and is mappable for a considerable distance in Arkansas. In Oklahoma it forms a broad sandy belt of country parallel to the axis of the Ouchita uplift. The average width of the outcrop is about 12 miles, and its length about 200 miles. The

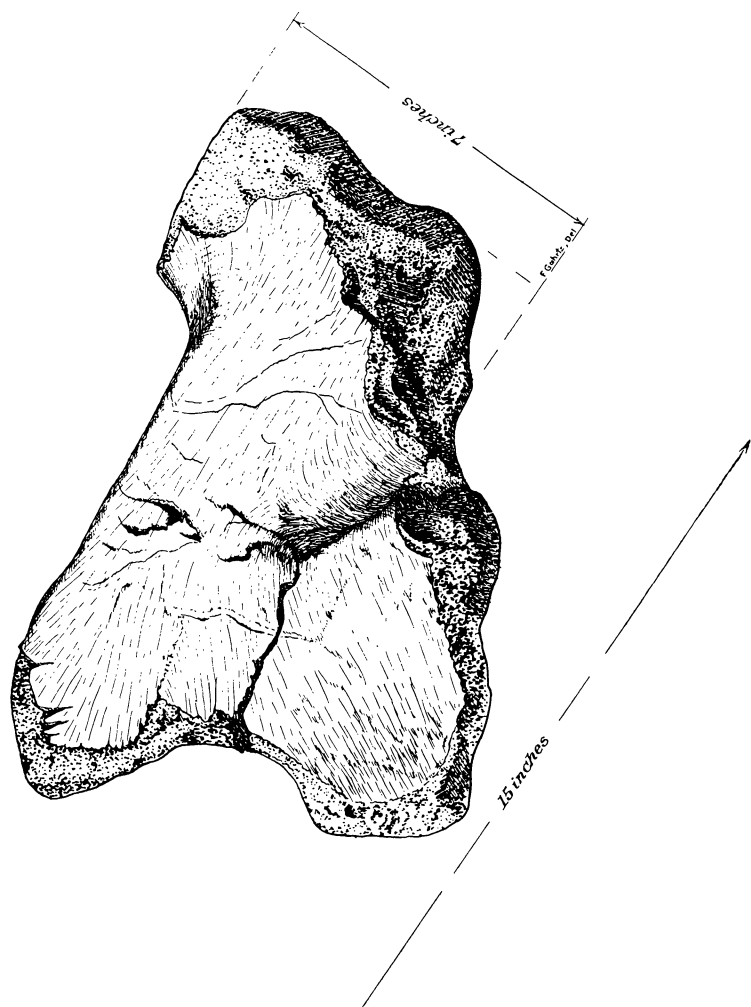


FIG. 3.—Right coracoid of sauropod, lower border; one-fourth natural size.

formation dips under other Cretaceous formations to the south and along Red River forms the reservoir of numerous artesian wells.

The thickness of the Trinity in Oklahoma varies from 200 to 800 feet.

The formation rests unconformably upon granites and Paleozoic rocks. It consists of conglomerates, unindurated or friable sandstones and clays mixed with varying quantities of sand. Most of this material bears evidence of being derived from adjoining rocks which formed the shore of the Cretaceous Sea. The conglomerates especially bear this characteristic. They always occur near the base of the formation and are formed of waterworn boulders and pebbles of the rocks

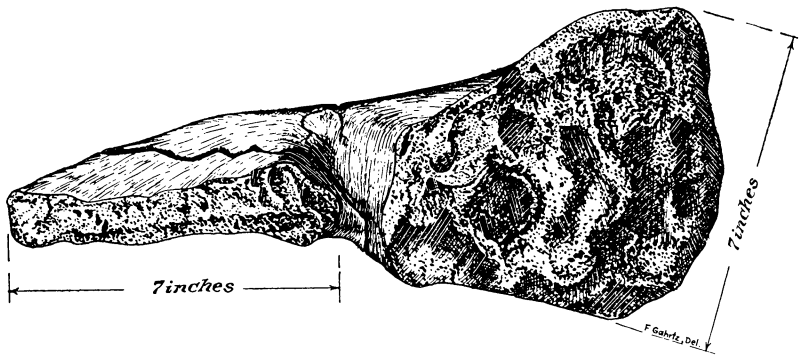


FIG. 4.—Right coracoid of sauropod, posterior border; one-fourth natural size.

upon which they rest, or of a formation near at hand. The sands and clays are not continuous over large areas but consist for the most part of lentils which are cross-bedded and irregularly thrown together. Everything points toward deposition in shallow turbulent water.

A following section across the Trinity along the line of the Missouri, Kansas and Texas Railroad from near Caddo, Oklahoma, to near Atoka, will give the reader some idea of the character of the Trinity at this place, and of the stratigraphic relations of the formations in which the bone was found.

The writer found the fossil dinosaur bone herewith figured in August, 1908, while making an examination of that region under the direction of the Oklahoma Geological Survey.

SECTION ALONG THE M. K. & T. RAILROAD, CADDO TO ATOKA, OKLA.

		FEET
24	24 Goodland limestone white and massive	20
23	23 Gray marl	10
22	22 Yellow cross-bedded sand	12
21	21 White sand marly in places	30
20	20 Sand in matrix of yellow clay	30
19	19 Red and yellow sand with waterworn fragments of gypsum and Ostreae	12
18	18 Yellow and red arenaceous clay containing clay ironstone concretions	15
17	17 Yellow clay locally containing lentils of white sand	12
16	16 White and yellow sand much cross-bedded and containing lentils of yellow sandy clay. It is one of these lentils from which the bone came .	40
15	15 Yellow packsand with lenses of blue arenaceous clay and white sand	20
14	14 Gray sand in matrix of clay with lentils of brown and red sand. Concretions near the base	40
13	13 Green gray colored clays containing much sand	34
12	12 Red sand cross-bedded	12
11	11 Blue and yellow clay with lentils of yellow and white sand	30
10	10 The character of these formations could not be determined owing to river deposits	80
9	9 Gray sandy clay	20
8	8 Yellow sandy clay	20
7	7 Yellow clay streaked with red and containing lentils of indurated sandstone	40
6	6 Valley of South Boggy Creek. The formations covered with alluvium	80
5	5 Gray sandy clay	40
4	4 Yellow arenaceous clay with lentils of brown packsand	20
3	3 Lentils of sand and gravel in beds of gray sandy clay	30
2	2 Grayish yellow clay with boulders and lentils of conglomerate	40
1	1 Atoka formation, Carboniferous shale with lentils of sandstone	00